What Is Claimed Is:

1. A multiple-shaft power transmission apparatus comprising:

a partition that delineates a space with a different environment from an atmospheric environment;

a plurality of inner magnetic rings disposed within the atmospheric environment; and

a plurality of outer magnetic rings disposed within the space delineated by said partition and magnetically coupled to said inner magnetic rings via said partition;

wherein said inner magnetic rings comprise a plurality of magnets disposed around the outer peripheral edge of a ring-shaped first yoke member such that the adjacent pole faces are mutually different;

said outer magnetic rings comprise a plurality of magnets disposed around the inner peripheral edge of a ring-shaped second yoke member such that the adjacent pole faces are mutually different;

said outer magnetic rings are supported via bearings on said partition so as to be rotatable in relation to said partition; and

one or both of said first and second yoke members can be disassembled so that the magnets that make up the various magnetic rings are allotted to a plurality of groups.

2. The multiple-shaft power transmission apparatus according to claim 1, wherein the difference between the number of magnets of said inner magnetic rings and the number of magnets of said outer magnetic rings is two.

3. The multiple-shaft power transmission apparatus according to claim 1, wherein said inner magnetic rings are supported via bearings on said partition so as to be rotatable in relation to the rotational axis of said outer magnetic rings.

4. The multiple-shaft power transmission apparatus according to claim 1, wherein the magnets that make up said inner magnetic rings are electromagnets.

5. The multiple-shaft power transmission apparatus according to claim 1, wherein a magnetic material is used for said first and second yoke members.

6. The multiple-shaft power transmission apparatus according to claim 1, wherein the magnets attached to said second yoke member are concave in the center portion of the pole faces opposite the magnets attached to said first yoke members.

7. The multiple-shaft power transmission apparatus according to claim 1, wherein the surfaces of said magnets are coated with nickel.

8. The multiple-shaft power transmission apparatus according to claim 1, wherein the total number of magnets that make up said inner magnetic rings or outer magnetic rings is a common multiple of the number of magnetic poles and the number of said groups.

9. The multiple-shaft power transmission apparatus according to claim 1, wherein the number of said groups is three.

10. A multiple-shaft power transmission apparatus comprising:

a partition that delineates a space with a different environment from an atmospheric environment;

a plurality of inner magnetic rings disposed within the atmospheric environment; and

a plurality of outer magnetic rings disposed within the space delineated by said partition and magnetically coupled to said inner magnetic rings via said partition;

wherein said inner magnetic rings comprise a plurality of magnets disposed around the outer peripheral edge of a ring-shaped first yoke member such that the adjacent pole faces are mutually different;

said outer magnetic rings comprise a plurality of magnets, in a number different from the number of magnets of said inner magnetic rings, disposed around the inner peripheral edge of a ring-shaped second yoke member such that the adjacent pole faces are mutually different;

said outer magnetic rings are supported via bearings on said partition so as to be rotatable in relation to said partition; and

the various magnets that make up said inner magnetic rings are displaced increasingly closer to said outer magnetic rings or further away from said outer magnetic rings in the order of the arrangement thereof, which imparts a rotational force to said outer magnetic rings.

11. The multiple-shaft power transmission apparatus according to claim 10, wherein said second yoke member can be

disassembled so that the magnets that make up said outer magnetic rings are allotted to a plurality of groups.

12. The multiple-shaft power transmission apparatus according to claim 10, further comprising a rotating member that is rotatable in relation to the rotational axis of said outer magnetic rings and that has a cross section which is elliptical in the direction perpendicular to said rotational axis;

wherein said first yoke member is flexible, part thereof is fixed with respect to said partition, and said rotating member is provided slidably along the side face of said first yoke member without causing the rotation of said first yoke member.

13. The multiple-shaft power transmission apparatus according to claim 10, wherein the number of magnets that make up said inner magnetic rings is two less than or two greater than the number of magnets that make up said outer magnetic rings.

14. A multiple-shaft power transmission apparatus comprising:

a plurality of inner magnetic rings; and

a plurality of outer magnetic rings magnetically coupled to said inner magnetic rings,

wherein said inner magnetic rings comprise a plurality of magnets disposed around the outer peripheral edge of a ring-shaped first yoke member such that the adjacent pole faces are mutually different;

said outer magnetic rings comprise a plurality of magnets, in a number different from the number of magnets of said inner magnetic rings, disposed around the inner peripheral edge of a ring-shaped second yoke member such that the adjacent pole faces are mutually different, and are supported so as to be rotatable; and

the various magnets that make up said inner magnetic rings are displaced increasingly closer to said outer magnetic rings or further away from said outer magnetic rings in the order of the arrangement thereof, which imparts a rotational force to said outer magnetic rings.

15. The multiple-shaft power transmission apparatus according to claim 14, wherein said second yoke member can be disassembled so that the magnets that make up said outer magnetic rings are allotted to a plurality of groups.

16. The multiple-shaft power transmission apparatus according to claim 14, further comprising a rotating member that is rotatable in relation to the rotational axis of said outer magnetic rings and that has a cross section which is elliptical in the direction perpendicular to said rotational axis;

wherein said first yoke member is flexible, and said rotating member is provided slidably along the side face of said first yoke member without causing the rotation of said first yoke member.

17. The multiple-shaft power transmission apparatus according to claim 14, wherein the number of magnets that make up said inner magnetic rings is two less than or two

greater than the number of magnets that make up said outer magnetic rings.

18. A wafer transport arm link comprising:

a tray joint shaft;

first and second distal end arms rotatable parallel to each other around said tray joint shaft;

a wafer placement tray provided on said tray joint shaft;

a third joint shaft provided to said first distal end arm;

a fourth joint shaft provided to said second distal end arm;

a first orientation arm coupled to said first distal end arm via said third joint shaft;

a second orientation arm coupled to said second distal end arm via said fourth joint shaft;

an orientation arm shaft that rotatively couples said first orientation arm and said second orientation arm in a state in which they are parallel to each other;

a rod-shaped guide magnet, one end of which is fixed to said wafer placement tray and the other end of which extends in a straight line over said orientation arm shaft; and

an orientation magnet that is provided at the location of said orientation arm shaft and that supports said guide magnet in non-contact fashion.

19. The wafer transport arm link according to claim 18, wherein the distance between said tray joint shaft and the third joint shaft is equal to the distance between said tray

joint shaft and the fourth joint shaft, and the length of said first orientation arm is equal to the length of said second orientation arm.

20. The wafer transport arm link according to claim 18, wherein a first inter-axial distance between said orientation arm shaft and said third and fourth joint shafts is greater than a second inter-axial distance between said tray joint shaft and said third and fourth joint shafts, but is within a range of from a substantially equal distance to a distance of the square root of two times said second inter-axial distance.

21. A wafer transport arm link comprising:

a tray joint shaft;

first and second distal end arms rotatable parallel to each other around said tray joint shaft;

a wafer placement tray provided on said tray joint shaft;

a third joint shaft provided to said first distal end arm;

a fourth joint shaft provided to said second distal end arm;

a first orientation arm coupled to said first distal end arm via said third joint shaft;

a second orientation arm coupled to said second distal end arm via said fourth joint shaft;

an orientation arm shaft that rotatively couples said first orientation arm and said second orientation arm in a state in which they are parallel to each other;

a rod-shaped shaft, one end of which is fixed to said wafer placement tray and the other end of which extends in a straight line over said orientation arm shaft; and

a bearing that is provided at the location of said orientation arm shaft and that slidably supports said rod-shaped shaft.

22. The wafer transport arm link according to claim 21, wherein the distance between said tray joint shaft and the third joint shaft is equal to the distance between said tray joint shaft and the fourth joint shaft, and the length of said first orientation arm is equal to the length of said second orientation arm.

23. The wafer transport arm link according to claim 21, wherein said bearing is a ball spline type.

24. A wafer transport arm link comprising:

a tray joint shaft;

first and second distal end arms rotatable parallel to each other around said tray joint shaft;

a wafer placement tray provided on said tray joint shaft; and

first, second, third, and fourth magnetic rings in which a plurality of magnets are arranged in one or a plurality of ring shapes at an approximately equal angle pitch in relation to the respective axes;

wherein said first and second magnetic rings are each provided rotatably having said tray joint shaft as the rotational axis, and these first and second magnetic rings

are coupled to said first and second distal end arms, respectively;

said third magnetic ring is magnetically coupled to said first magnetic ring and rotates along with the rotational motion of said first magnetic ring;

said fourth magnetic ring is magnetically coupled to said second magnetic ring and rotates along with the rotational motion of said second magnetic ring; and

the rotational motion of said first and second magnetic rings is controlled by magnetic coupling produced between these third and fourth magnetic rings, the relative positions of the respective rotational axes of said third and fourth magnetic rings are kept constant with respect to a straight line that divides in two equal parts the angle between said first distal end arm and said second distal end arm, and the distance between the various rotational axes is equal.

25. A wafer transport arm link comprising:

a multiple-shaft power transmission apparatus;

a first arm coupled to said multiple-shaft power transmission apparatus;

a second arm coupled to said multiple-shaft power transmission apparatus;

a tray joint shaft;

first and second distal end arms rotatable parallel to each other around said tray joint shaft;

a wafer placement tray provided on said tray joint shaft;

a first joint shaft that rotatably couples the distal end of said first arm to the distal end of said first distal end arm;

a second joint shaft that rotatably couples the distal end of said second arm to the distal end of said second distal end arm; and

direction maintenance means for guiding said tray joint shaft toward said multiple-shaft power transmission apparatus in a state in which said wafer placement tray is facing in the direction determined from the positional relationship between said tray joint shaft and said multiple-shaft power transmission apparatus,

wherein magnets with mutually different poles are provided to said first arm and said first distal end arm, and magnets with mutually different poles are provided to said second arm and said second distal end arm; and

further comprising a jackknife extricator that generates a repulsion force between said first arm and the first distal end arm and between said second arm and the second distal end arm as said tray joint shaft approaches said multiple-shaft power transmission apparatus.